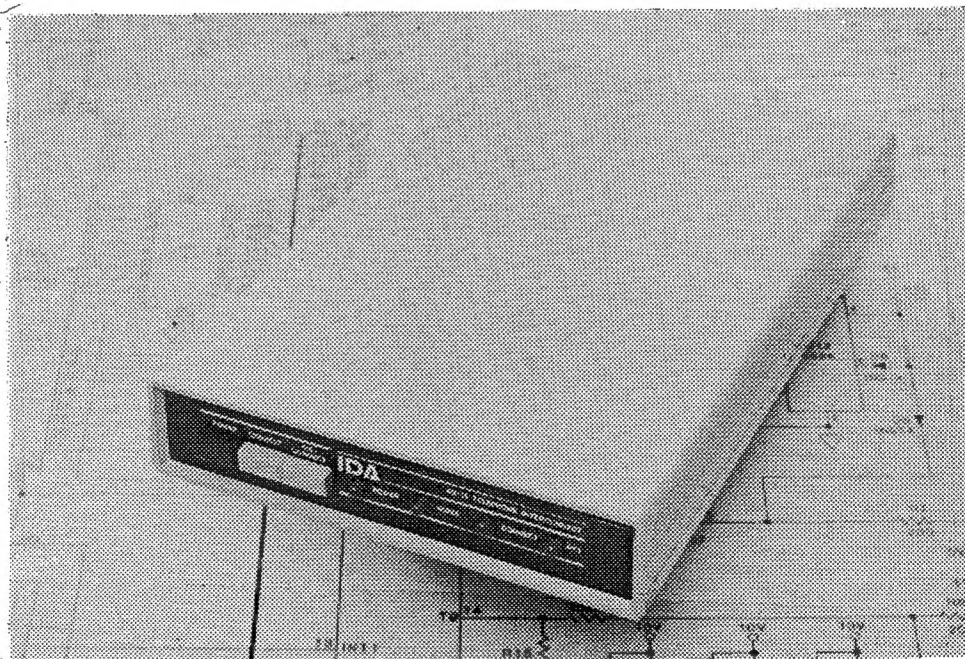


40-15 INTERCONNECT



SPECIFICATIONS

SUPPLY VOLTAGE	13.8 VOLTS DC +/- 20 %
TEMPERATURE:	-20 c to +70 c
POWER REQUIREMENT	300 mA.
INPUT LEVEL FROM RECEIVER	-40 dbm to +10 dbm
RECEIVER INPUT IMPEDANCE	10K
OUTPUT TO TRANSMITTER	-40 dbm to +6 dbm
TX AUDIO OUTPUT IMPEDANCE	47K Ohms high impedance 470 Ohms low impedance
DTMF TONE REGENERATION FROM MOBILE	
TELEPHONE LEVEL	IN -30 dbm to +4 dbm OUT -40 dbm to +4 dbm
INTERRUPT TIMER WINDOW	20 to 160 msec - switch selectable
SAMPLE RATE	400 msec to 2 sec - switch selectable
MOBILE NON ACTIVITY TIMER	15 sec to 2 min - switch selectable
CALL LENGTH TIMER	3 minutes On or Off
DIAL PULSE CHARACTERISTICS	enabled by switch 60/40 make/break ratio 10 pulses/sec 800 msec interdigit time
CW-ID OPTION	factory option - 20 words per minute
SIMPLEX/HALF DUPLEX	jumper selectable
LONG DISTANCE INHIBIT	0, 1, 8, 9 inhibit- switch selectable 411 inhibited when 1 inhibited
AUXILIARY RELAY	enabled when connected
ACCESS CODE	0-3 digits 0-999 Independent for access & disconnect
RINGOUT ENABLE	once per call or once every ring jumper selectable
SPEED DIAL STORAGE	five sixteen digit numbers
LAST NUMBER REDIAL	
I/O CONNECTOR	25 pos. D-submini. DB-25 female
PHONE LINE CONNECTOR	modular phone line receptacle
DIMENSIONS	6.33" W x 9.5" L x 1.48" H

IDA CORPORATION MODEL 40-15 SAMPLING INTERCONNECT

TABLE OF CONTENTS

SPECIFICATIONS.....	Front
1.0 GENERAL DESCRIPTION.....	1
2.0 INSTALLATION.....	2 - 4
3.0 OPERATING ADJUSTMENTS.....	5 - 9
4.0 OPERATION.....	9 , 10
5.0 APPENDIX A	
ADJUSTMENT LOCATIONS.....	11
SCHEMATICS.....	12 , 13
PARTS LISTS.....	14

1.0 GENERAL DESCRIPTION

The IDA Corporation model 40-15 Interconnect allows mobile users to be connected to standard telephone systems for the purpose of receiving or initiating telephone calls from their mobile units.

The 40-15 is installed at the base station. Upon activation of the 40-15, the base station is connected to the phone line, allowing simplex or half duplex operation. A DTMF encoder must be installed at each mobile. Connections from the 40-15 to the base station are made at easily identifiable locations and depend on the radio used.

The 40-15 does not use VOX control. Upon connection, the 40-15 causes the base to transmit, interrupting the transmission at a user selectable rate and for a user selectable time in order to look for a carrier from the mobile. This rate changes depending on whether there is audio on the phone line. Upon the detection of a carrier from the mobile, the base stops transmitting and allows the mobile to talk. This gives the mobile complete control of the interconnect. When the mobile user stops transmitting, the 40-15 re-activates the base transmitter allowing the mobile user to listen. In half duplex mode, the sampling feature is bypassed, allowing the mobile user complete control of the interconnect.

Also, if the 40-15 is connected directly to the phone line, it will detect whether the phone line is in use and will inhibit the mobile user from accessing the phone line.

The 40-15 is compatible with most two-way simplex base stations and half duplex repeater systems. It is also compatible with both DTMF and dial pulse lines. Front panel controls include a **POWER** switch, a **CONNECT** and **DISCONNECT** switch. Front panel indicators include **POWER**, **CARRIER**, **CONNECT** and **XMIT**.

Rear panel connectors are a DB-25 (J7) connector to which all connections to the base station are made. There is also a modular telephone jack (J6) for connection to a phone line.

The 40-15 has available a **CW-ID** option which allows transmission of the station ID upon activation and/or deactivation of the interconnect. Operation of this option is switch selectable. This option can be specified at the time of order, or may be added at a later time.

2.0 INSTALLATION

The 40-15 has been carefully packed for shipment. Upon receipt of the unit, it should be checked for evidence of physical damage. Any problems should be reported to IDA Corporation.

Connection of the 40-15 to the radio is done through the DB-25 connector located on the back panel. There is an optional installation kit available. There are typically only seven connections to be made between the radio and the 40-15. These connections are POWER, GROUND, PTT, AUX RELAY, NOISE or CARRIER, MIC audio and RECEIVE audio. See figure of DB-25 below.

1	AUX relay wiper	14	AUX relay N.C.
2	AUX relay N.O.	15	Noise
3	TX audio high impedance	16	Carrier low
4	Carrier high	17	RX audio
5	PTT	18	N/C
6	TX audio low impedance	19	N/C
7	N/C	20	CLS
8	N/C	21	RD DIS
9	Switched 12V	22	CLS
10	CRD	23	Tip
11	Ring	24	GND
12	GND	25	12V in
13	12V in		

JUMPER CONFIGURATION

There are 6 jumper locations that are defined as follows:

J1	-	IN	single ringout
		OUT	ringout every ring
J2	-	IN	Simplex
		OUT	Half duplex
J4	-	IN	Noise input active
		OUT	Noise input in-active
J5	-	IN	always
J8	-		Installed to disable phone line busy signal
JP9	-	IN	Earth to board ground
		OUT	Earth ground separate (must bring wire out of cabinet)

ADJUSTMENT POTENTIOMETERS

R41	-	DTMF Deviation
R69	-	Phone line audio detect
R92	-	Noise sensitivity
R101	-	TX audio
R103	-	RX audio

POWER CONNECTIONS

POWER and GROUND are connected to pins 13, 25 and 12, 24 respectively, on the DB-25. This should be 13.8 volts plus or minus 20%. The 40-15 is fused internally with a **one amp fuse**. The power supply should be capable of supplying at least 0.5 amperes. **Earth** ground may be accomplished by removing jumper JP9, and fastening a suitable wire to P1 location, and running it out the cabinet to a proper earth ground.

NOISE/CARRIER INPUTS

Detection of a carrier from the mobile is accomplished with either the NOISE input or the CARRIER inputs. To use the NOISE input, a point must be found in the radio before the squelch gate. This point will have noise present when there is no carrier being detected from the mobile. Upon detection of a carrier from the mobile, this point will "quiet" and have only audio. The NOISE detection circuitry in the 40-15 will respond only to the noise.

An alternate connection can be made to the squelch gate of the base radio. Here there will normally be a high or low voltage present when there is a carrier from the mobile. If the voltage is high when there is a carrier present, use the CARRIER high input. If the voltage is low when there is a carrier present, use the CARRIER low input. Be sure to remove jumper J4 when using the CARRIER inputs. See Figure 3 on page 11 for location of jumper J4.

BASE STATION AUDIO CONNECTIONS

RECEIVE AUDIO

The base station receive audio is connected to the 40-15 via pin 17 on the DB-25. **This is an unbalanced high impedance input only!** Normally this audio can be taken from the output of the squelch gate in the base, or it may be taken from the speaker outputs if the speaker outputs are not balanced outputs. Taking this audio from the speaker outputs, however, means that the volume control setting of the radio will affect the audio level going to the 40-15.

TRANSMIT AUDIO

Audio going to the base station from the 40-15 interconnect comes out on pins 3 and 6 of the DB-25. **These are unbalanced outputs only!** It may be connected directly to the microphone input of the base station. Pin 3 is designed for high impedance connections (47K Ohms) and pin 6 is designed for low impedance connections (470 Ohms).

PTT

The PTT output is an open collector output capable of driving 100 mA. This output pulls the PTT line of the radio low to transmit. This output is on pin 5 of the DB-25. This output can normally be connected to the PTT line on the microphone input.

AUXILIARY RELAY

The auxiliary relay is activated anytime the 40-15 causes the off-hook relay to activate. The outputs are available on pins 1, 2, and 14 of the DB-25. See Figure 1 on page 2.

TELEPHONE CONNECTIONS

The 40-15 is directly compatible with all DTMF telephone lines. An internal switch allows both tone and dial pulse options. For more information see section 3.0 OPERATING ADJUSTMENTS on page 5.

The 40-15 can be connected to the phone line directly or through a coupler. On private telephone systems, it is allowable to connect the 40-15 directly to the phone line. Simply plug a phone cable into the modular receptacle on the rear of the unit.

Connection to standard telephone company lines must be done through a coupler. IDA has available a coupler for this purpose. The coupler should be connected to the 40-15 as shown in Figure 2 below.

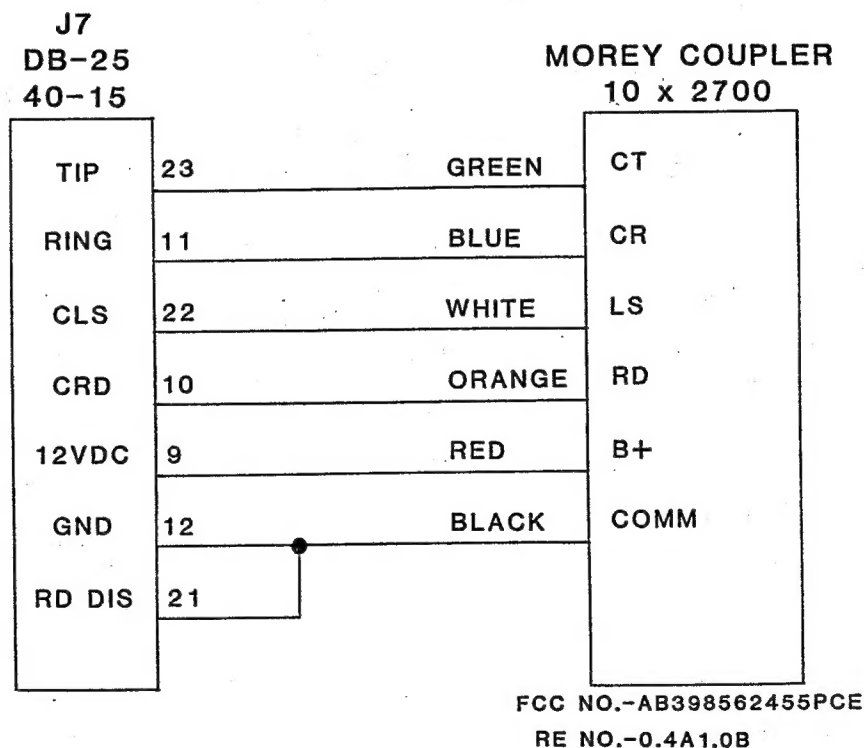


FIGURE 2

3.0 OPERATING ADJUSTMENTS

All operating adjustments are internal to the interconnect. The top of the case may be removed by removing the four screws located on the bottom of the case.

The DIP switches are labeled as shown in Figure 3 on page 11. The adjustment potentiometers are also labeled.

SWITCH SETTING - PHONE LINE BUSY OPTIONS

The phone line busy feature allows the 40-15 to return a busy signal to the mobile user if the phone line to which the 40-15 is connected is busy when the mobile user attempts to access it.

The 40-15 outputs 5 busy signals and goes idle. this feature is controlled by jumper J8 and SA1 switch 4. With the jumper J8 installed, the setting of switch 4 is irrelevant, and the phone line busy feature will be disabled. The mobile user will get access to the phone line when it is busy, but the 40-15 will not pass audio to the phone line since it is waiting for digits to be dialed.

If J8 is not installed and switch 4 is ON, the mobile user will get access to a busy phone line and the 40-15 will immediately pass audio to the phone line without any digits being dialed.

If J8 is not installed and switch 4 is OFF, the mobile user will be given busy tone when attempting to access a busy phone line.

SAMPLE TIME

The sample rate of the 40-15 may be varied from 600 milliseconds to 1.9 seconds by changing the switch setting of switch SA1. The 40-15 monitors the phone line audio and if there is no audio present, the sample time is four times the speed of the switch setting.

Sampling rate

Switches on

0	none
0.6 sec	1
0.9 sec	2
1.1 sec	1 and 2
1.3 sec	3
1.5 sec	1 and 3
1.7 sec	2 and 3
1.9 sec	1 and 2 and 3

SA1 Sampling time adjustment

WINDOW TIME

The window time may be adjusted from 20 milliseconds to 160 milliseconds by changing the setting of switch SA2. This setting should be the shortest possible time for the radio to detect whether there is a carrier present.

Window time	Switches on
20 msec	none
40 msec	1
60 msec	2
80 msec	1 and 2
100 msec	3
120 msec	1 and 3
180 msec	2 and 3
260 msec	1 and 2 and 3

SA2 Window Time Adjustment

CALL LENGTH TIMER

The call length timer is internally set for three minutes. This timer may be disabled by turning off position 8 of switch SA1. If the call length timer is enabled, there will be a warning tone sent to the mobile user at the first possible time after two and one half minutes have elapsed and also at the first possible time after two minutes and forty-five seconds.

MOBILE NON-ACTIVITY TIMER

The mobile non-activity timer can be adjusted from 15 seconds to two minutes by changing switch SA1. See the figure below for the settings of this switch. Seven seconds before the timeout of the timer, the mobile user will hear a two tone sequence. He must then key his radio or the call will be terminated.

Mobile Non-Activity Time	Switches on
15 seconds	none
30 seconds	5
45 seconds	6
60 seconds	5 and 6
75 seconds	7
90 seconds	5 and 7
105 seconds	6 and 7
120 seconds	5 and 6 and 7

SA1 Mobile Non-Activity Adjustment

DIAL PULSE ENABLE

For telephone systems requiring dial pulse rather than DTMF dialing, the user may enable dial pulse operation by switching on position 1 of switch SA3. The dial pulse characteristics are 10 pulses per second, 60/40 make break ratio, 800 milliseconds interdigit time. The mobile user may enter the digits at any speed, as the input digits are buffered by the 40-15. Number storage and last number redial are the same as the DTMF case.

CW-ID ENABLE

If the CW-ID option is installed, this will be enabled by switches on SA3. The ID code may be transmitted when the mobile user requests a connect and if the three minute timer is disabled, every 30 minutes during a connect. The code may also be transmitted on disconnect.

Switch On

ID on connect	4
ID on disconnect	3

SA3 CWID Enable

LONG DISTANCE INHIBIT

Long distance numbers beginning with 0,1,8, or 9 can be inhibited from being dialed by setting the appropriate switches on SA3. To inhibit 0, 1, 8, or 9 from being dialed as the first digit, switch on the appropriate switch as shown in the table below.

Digits to inhibit	Switch on
0	5
1	6
8	7
9	8

SA3 Long Distance Inhibit

When an inhibited first digit is dialed, the 40-15 will respond with 7 illegal access beeps, and terminate the call. Setting the inhibit for a first digit of 1 also causes all 4-1-1 calls to be inhibited.

ACCESS CODE

The access code of the 40-15 is entered in switches SA2 and SA4. There may be from 0 to 3 digits. If the switches are all off, then only a * is required to access the 40-15. Any digits from 0 - 9 can be used for the access code. If any digit has all the switches off, it is ignored. Switch SA2 contains the most significant digit and SA4 contains the two least significant digits. A zero in the access code is obtained by values 8 and 2. If the user requires the access code for disconnect also, he should switch on SA2 position 4.

Switch	Value	
SA2-5	1	Add values for switches in the on position to obtain first access digit
SA2-6	2	
SA2-7	4	
SA2-8	8	
SA4-1	1	second access digit
SA4-2	2	
SA4-3	4	
SA4-4	8	
SA4-5	1	third access digit
SA4-6	2	
SA4-7	4	
SA4-8	8	

SA2 and SA4 Setting up access code

RINGOUT ENABLED

On receipt of a telephone ring, the 40-15 may be set to send out either only one ring, or a ring every time. This is controlled by jumper J1. If the jumper is installed only one ring is sent out. If the jumper is not installed, then the 40-15 will ringout every time a ring is received from the phone line.

RINGOUT TONE(S)

On receipt of a telephone ring, the 40-15 will send out one of two possible ring signals as determined by switch SA3 position 2. If switch SA3-2 is off, the ring signal will alternate between 697Hz and 1209Hz. This produces a warble very similar to a telephone ring and has a duration of one (1) second. If switch SA3-2 is on, the ring signal will be the single frequency of 697Hz and have a duration of three (3) seconds. The number of ring signals sent out is determined by jumper J1 (see above).

HALF DUPLEX

The 40-15 may be used in a half duplex mode by removing jumper J2. In half duplex mode the 40-15 sampling feature is disabled and it switches the audio path anytime it detects a carrier from the mobile. See Figure 3 on page 11 for location of this jumper.

AUDIO ADJUSTMENTS

RECEIVE AUDIO ADJUST

The receive audio may be changed by adjusting R103. (See Figure 3 on page 11 for the location of this and other potentiometers.) The audio going to the phone line is limited internally to 6dbm. Normally this potentiometer does not have to be adjusted.

TX DEVIATION

To change the deviation of the transmitter due to the phone line audio, adjust R101. If in the simplex mode, first remove jumper J2 to disable the sampling function of the 40-15. Then adjust R101 to obtain the required deviation. R41 is adjusted in a similar manor to adjust the DTMF generator deviation.

NOISE INPUT LEVEL ADJUST

If the NOISE input is used for carrier detect, R92 must be adjusted for reliable operation. Key the mobile, and adjust R92 so that the CARRIER light comes on. Unkey the mobile and make sure the CARRIER light goes out.

PHONE LINE AUDIO DETECTION ADJUSTMENT

Perform a front panel connect. Adjust R69 so that the red LED D27 comes on (See Figure 3 on page 11). When the dial tone disappears, this LED should go out, and the sampling rate of the 40-15 should increase by a factor of four.

4.0 OPERATION

To connect from a mobile radio the user need only press the * button on his mobile keypad, followed by the access code if there is one. If the CW-ID is installed and enabled, this will be sent out when PTT is released. The user should then hear the dial tone. To dial, the user should then press PTT (if in simplex mode), and wait to make sure that the interconnect has detected his presence. At this time he may then dial using his DTMF pad on the mobile. When he is done talking, disconnect by pressing the # key on the keypad. Once a number has been dialed the 40-15 no longer regenerates the DTMF tone coming from the mobile. Any tones coming from the mobile radio are passed directly to the phone line. To insert a delay into the stored number, the user may enter a *. Each * is approxiamately 2 seconds of delay.

SPEED DIAL NUMBER STORAGE

The 40-15 allows for the storage of five sixteen digit speed dial numbers. These number locations are numbered from 1 to 5. To store numbers in these locations, the user should enter a * followed by the access code. The user should then enter * * * followed by the location into which the number is to be stored. The user should hear a tone. The number to be stored may now be entered. When the number has been entered, the user should then press # on the keypad, followed by the access code. The number has been stored.

When there is no access code, the user should enter a * to get dial tone, and then a * * followed by the location into which the number is to be stored. The 40-15 will then proceed as above.

DIALING A STORED NUMBER

To dial a number that has been stored, the user should press * followed by the access code to get the dial tone. Then press * * followed by the number of the location to be dialed. The 40-15 will connect and dial the number after the mobile is no longer transmitting. The next audio heard will be the 40-15 dialing.

When there is no access code, the user should enter a * * followed by the number of the location to be dialed. The 40-15 will then proceed as above.

LAST NUMBER REDIAL

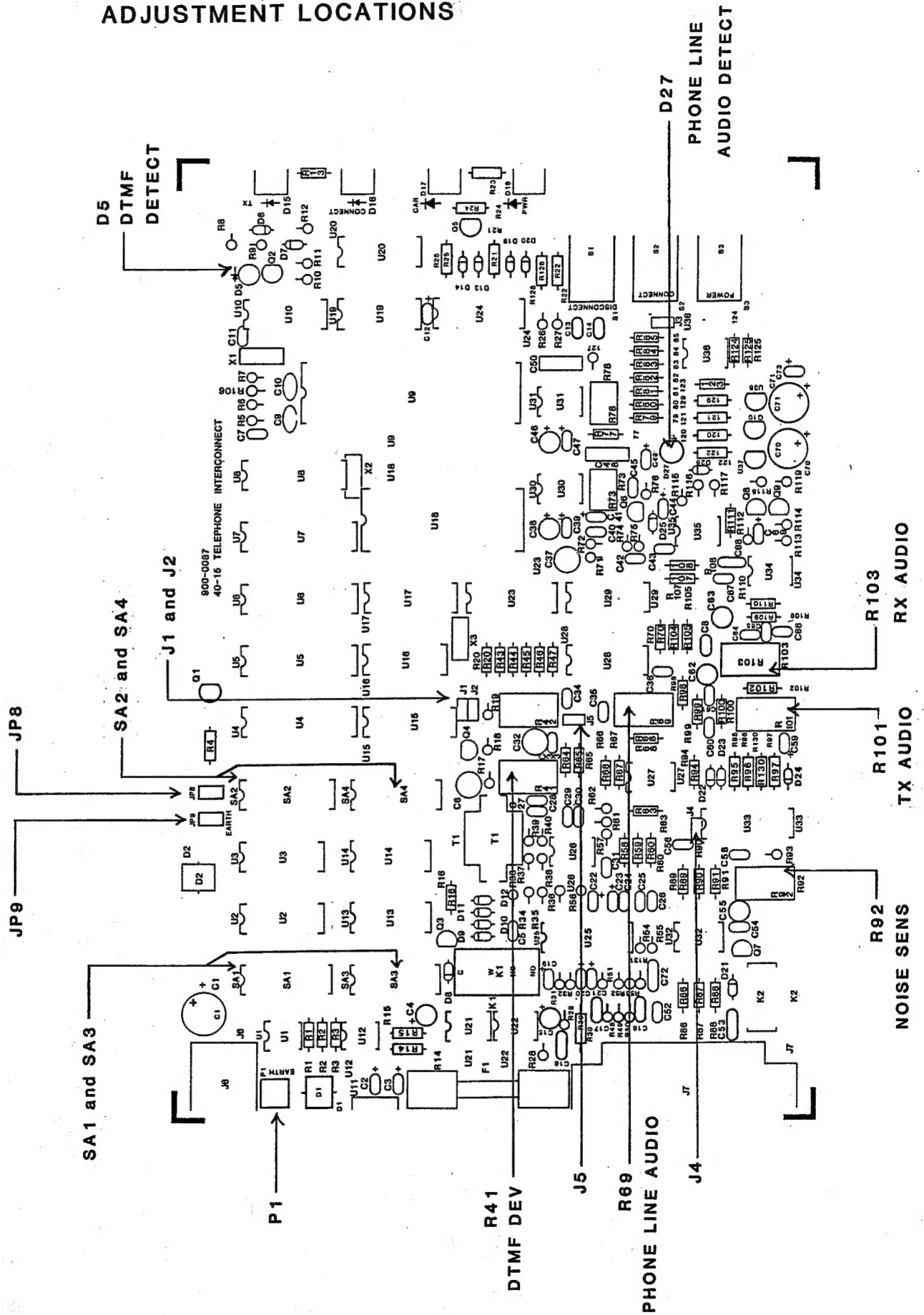
The mobile user can redial the last number by entering a * followed by the access code, followed by * *, followed by a zero (0).

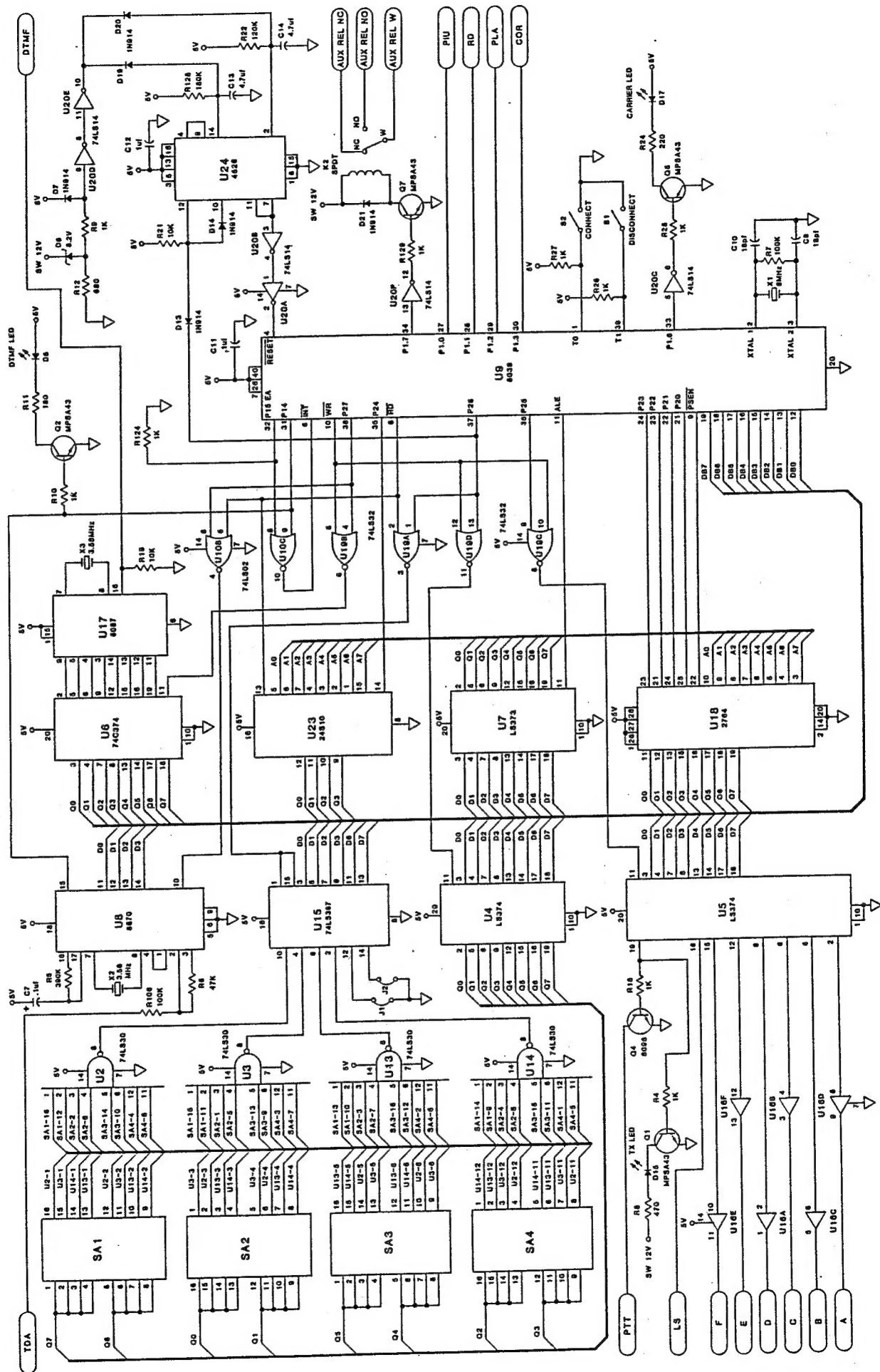
To redial the last number when there is no access code, the user enters a * to get dial tone, then enters another * followed by a zero (0).

NO RINGOUT DURING MOBILE ACTIVITY

On an incoming ring, the 40-15 will not ringout within 5 seconds of previous mobile activity. This reduces the chances that the mobile user will hear a ringout during dispatch operation. It also reduces the chances that he will miss a ringout if he is transmitting when the ring occurs. Even if the 40-15 is set for single ringout only, the ringout will occur five seconds after mobile transmission ceases.

ADJUSTMENT LOCATIONS





40-15 TELEPHONE INTERCONNECT

ITEM	REF. NO.	PART NO.	DESCRIPTION	QTY.	ITEM	REF. NO.	PART NO.	DESCRIPTION	QTY.
1	C1,70,71	360-0005	100uF 16V ELEC. CAP.	3	54	SA1,2,3,4	613-0003	8 POS DIP SWITCH	4
2	C2,3,44,69,73	390-0007A	10uF 35V TANT. CAP.	5	55	S1,2,3	611-0025	SWITCH ASSEMBLY	1
3	C4,15	360-5106	10uF 50V ELEC. CAP.	2	56	T1	410-0003	600 OHM COUPLING TRAN.	1
4	C6,32,62,63,55,72	361-0002	2uF NP CAP.	6	57	U1,12	130-0212	TIL128 OPTO COUPLER	2
5	C7,8,11,27,28,34,35, 36,42,43,52,60,61, 64,65	362-0001	.1uF MONO. CAP.	15	58	U2,3,13,14	74LS30 IC	74LS30 IC	2
6	C9,10	370-0019	18 pF CER DISC CAP	2	59	U4,5	130-0105	74LS374 IC	2
7	C12	390-0003	1uF 35V TANT. CAP.	1	60	U6	130-0131	74C374 IC	1
8	C13,14	390-0004	4.7uF 35V TANT. CAP.	1	61	U7	130-0103	74LS373 IC	1
9	C16,68	362-0002	.47uF MONO. CAP.	2	62	U8	130-0143	8870 IC	1
10	C33	364-0222	.0022uF POLY. CAP.	1	63	U9	130-0206	8039 IC	1
11	C54,58	362-0003	.01uF MONO. CAP.	2	64	U10	130-0116	74LS02 IC	1
12	C56,67	362-0004	330pF MONO. CAP.	2	65	U11	130-0022	7805 IC	1
13	C59	390-0005	2.2uF 35V TANT. CAP.	1	66	U15	130-0108	74LS367 IC	1
14	C66	362-0006	.001uF MONO. CAP.	2	67	U16	130-0207	74C906 IC	1
15	D1,2	111-0011	230V GAS DIODE	1	68	U17	130-0201	5087 IC	1
16	D5,27	112-0001	XC526R LED RED	2	69	U18	130-0126	2764-2 IC	1
17	D6	111-0007	8.2V ZENER DIODE	2	70	U19	130-0112	74LS32 IC	1
18	D7,8,13,14,19,20, 21,22,23,24,25	110-0001	1N914 DIODE	11	71	U20	130-0125	74LS14 IC	1
19	D15,16,17,18	112-0013	GREEN LED ASSEMBLY	1	72	U21,22	130-0208	1520 A IC	2
20	D26	111-0004	5.1V ZENER DIODE	1	73	U24	130-0066	4528 IC	2
21	F1	290-0002	1 AMP FUSE	1	74	U28,29	130-0067	4066 IC	2
22	F1	291-0001	PC MOUNT FUSE CLIP	1	75	U32,34,35	130-0120	TL062 IC	3
23	JP1,2,4,5,8,9	231-1002	2 POS JUMPER POST	2	76	U33	130-0111	4049 IC	1
24	JP1,2,4,5,8,9	234-0046	SHORTING PLUG	6	77	U37	130-0209	78L10 IC	1
25	J6	234-0052	6 POS 4 CON PHONE JACK	6	78	U38	130-0132	78L05 IC	1
26	J7	231-0004	DB25 RT ANGLE PC MOUNT	1	79	U1,12	220-0006	6 PIN I.C. DIP SOCKET	2
27	K1	700-0012	DPDT MINI RELAY	1	80	U2,3,10,13,14,16,19, 20,28,29	220-0002	14 PIN IC DIP SOCKET	10
28	K2	700-0005	SPDT MINI RELAY	1	81	U4,5,6,7	220-0009	20 PIN IC DIP SOCKET	4
29	Q1,2,3,5,6,7,10	180-0008	MPSA43 TRANSISTOR	1	82	U8	220-0004	18 PIN IC DIP SOCKET	1
30	Q4	180-0009	MPS8098 TRANSISTOR	7	83	U9	220-0007	40 PIN IC DIP SOCKET	1
31	Q8	180-0006	2N5401 TRANSISTOR	1	84	U15,17,23,24,33	220-0001	16 PIN IC DIP SOCKET	5
32	Q9	180-0012	2N5457 FET TRANS.	1	85	U18	220-0008	28 PIN IC DIP SOCKET	1
33	R3,15,19,20,21,29,43, 44,45,46,47,74,94,97, 99,100,111,120	312-0011	10K 5% 1/4 W RES.	18	86	U21,22,32,34,35	220-0003	8 PIN IC DIP SOCKET	5
34	R4,9,10,16,18,25,26, 27,95,105,124,129	312-0019	1K 5% 1/4 W RES.	12	87	U11,J7	199-3055	4-40 x 1/4" SCREW	3
35	R5,89	312-0001	390K 5% 1/4 W RES.	2	88	U11	199-0010	4-40 HEX NUT	1
36	R6,68,90,96,130	312-0020	47K 5% 1/4 W RES.	5	89	X1	305-0006	6MHZ CRYSTAL	1
37	R7,39,64,65,70,75,87, 91,102,104,106,109,110, 112,113,115,116,117,121	312-0003	100K 5% 1/4 W RES.	19	90	X2,3	305-0001	3.58 MHZ CRYSTAL	2
38	R8,13,122,131	312-0028	470 OHM 5% 1/4 W RES.	4	91	X1,2,3	201-2013	CRYSTAL CUSHION	3
39	R11	312-0025	180 OHM 5% 1/4 W RES.	1	92		900-5052	PLASTIC CASE ASSY.	1
40	R12	312-0017	680 OHM 5% 1/4 W RES.	1	93		900-5050	FRONT FACE PLATE	1
41	R14,28	312-0007	2.2K 5% 1/4 W RES.	2	94		900-5051	REAR PLATE	1
42	R22,114	312-0008	120K 5% 1/4 W RES.	2	95		900-0087	P.C. BOARD 40-15	1
43	R23,24	312-0052	220 OHM 5% 1/4 W RES.	2	96		199-6009	SERIAL NO. LABEL	1
44	R30	313-0009	33 OHM 5% 1/2 W RES.	1					
45	R33	312-0045	620 OHM 5% 1/4 W RES.	1					
46	R41,69,92,101,103	351-0002	10K 1 TURN POT.	5					
47	R66,98,108	312-0047	1M 5% 1/4 W RES.	3					
48	R88	312-0032	51K 5% 1/4 W RES.	1					
49	R93	312-0010	100 OHM 5% 1/4 W RES.	1					
50	R107	312-0055	75k 5% 1/4 W RES.	1					
51	R118	312-0018	6.8K 5% 1/4 W RES.	1					
52	R119	312-0023	3K 5% 1/4 W RES.	1					
53	R128	312-0057	180 K 5% 1/4 W RES.	1					

OPTION 371
40-15 INSTALLATION KIT
105-4015

ITEM	REF. NO.	PART NO.	DESCRIPTION	QTY.
1	199-3057	4-40 x 1/2" SLOT SCREW		2
2	231-0005	DB25 WITH MALE PIN		1
3	231-0006	4 POS. MODULAR PLUG		2
4	231-0015	DB25 COVER ASSEMBLY		1
5	800-1002	4 COND. TELEPHONE WIRE		6ft.
6	800-1105	9 COND. CABLE		4ft.
		OPTION 370		
		CW ID CHIP		

ITEM	REF. NO.	PART NO.	DESCRIPTION	QTY.
1	U23	130-0211	256 x 4 PROM 24S10 IC	1